

FinTech and Sustainable Finance: Transforming Traditional Banking for a Greener Future

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ABSTRACT

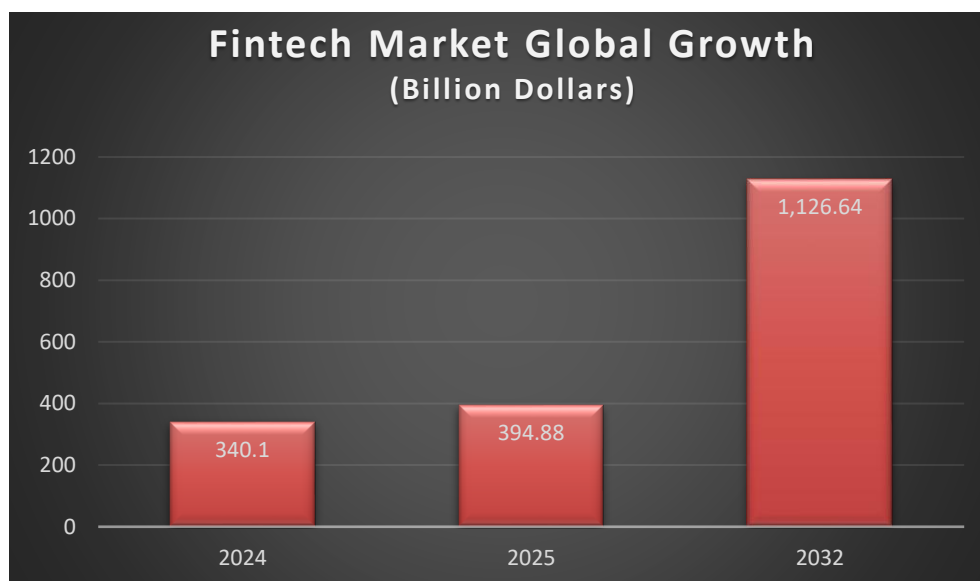
The emergence of FinTech and sustainable finance is transforming the global financial landscape by integrating modern technologies such as artificial intelligence, blockchain, and big data into financial services. FinTech platforms enable faster, more accessible, and eco-friendly solutions through mobile banking, digital payments, peer-to-peer lending, and green finance initiatives. In India, the rise of FinTech firms like Paytm and PhonePe has driven traditional banks to digitise their offerings, invest in advanced technologies, and form strategic partnerships to remain competitive. This study analyses the perceived quality, convenience, and user satisfaction with FinTech and sustainable finance services, as well as their impact on traditional banking operations. Despite rapid growth, the sector faces challenges such as regulatory complexities, funding constraints for smaller startups, and building customer trust. The findings highlight that while FinTech companies promote financial inclusion, operational efficiency, and environmental sustainability, they must address regulatory and funding challenges to achieve long-term viability and inclusive market expansion.

Keywords: FinTech, sustainable finance, traditional banking, digital banking, India, financial inclusion, green finance, regulatory challenges.

Introduction

FinTech refers to applying modern technology to financial services – for example, mobile payments, peer-to-peer (P2P) lending, digital banking apps, and even cryptocurrencies (Zhitao Li and Ping Chen 2024). These innovations typically deliver faster, cheaper services than traditional banks and dramatically reduce the need for paper forms, physical branches, and legacy infrastructure (Kuosuwan & Risman, 2024). As a result, FinTech companies can operate with lower overhead and carbon impact. The FinTech sector has grown explosively: it was valued at about \$340 billion in 2024 and is projected to exceed \$1.1 trillion by 2032 (roughly 16% annual growth) (Report Fortune Business Insights: FBI10864). This boom is driven by factors like booming e-commerce, widespread smartphone and internet access, and customer demand for instant, mobile-first financial services. In practice, FinTech startups (and even Big Tech firms) use tools like cloud computing, big data and AI to automate services and out-manoeuvre traditional bank.

FinTech companies are leveraging this momentum to support sustainability. For example, green FinTech platforms are redirecting capital toward climate-friendly projects: crowd-funding marketplaces now connect individual investors with renewable energy startups or conservation projects (Falchi & Macchioni). Blockchain and tokenization technology are being used to trade carbon and biodiversity credits on transparent digital ledgers. Even banks are adopting FinTech for green finance: in 2019 BBVA issued one of the first blockchain-based “green” bonds via its own digital platform. In 2023, over \$1.4 billion of venture capital flowed into European “climate tech” FinTechs, reflecting growing investor interest (Falchi & Macchioni). The global fintech market is projected to grow at a compound annual growth rate (CAGR) of 16.20% from 2025 to 2032, which is expected to increase from \$340.1 billion in 2024 to \$394.88 billion in 2025, reaching \$1,126.64 billion by 2032, indicating a strong upward trend in fintech investments and market expansion.



Source: Adapted from *Fortune Business Insights, Fintech Market Report, 2024*

Some key **FinTech-driven green finance innovations** include:

- **Crowdfunding for Green Projects:** Digital portals match savers with eco-friendly ventures (e.g. a solar-panel farm or reforestation initiative) that might not qualify for traditional bank loans.
- **Tokenized Carbon Trading:** Blockchains are being used to create digital tokens for carbon offsets or biodiversity credits, making it easier to buy, sell, and track contributions to emissions reduction (Falchi & Macchioni).
- **Green Loans and Bonds:** Many fintech startups and banks now offer specialized green loan products for renewable energy, electric vehicles, energy-efficient homes, etc., as well as green bond issuances for large projects.
- **ESG Investment Platforms:** FinTech apps are emerging that simplify sustainable investing – for instance, robo-advisors or mobile apps that let users pick portfolios based on Environmental, Social and Governance criteria.

These FinTech tools extend sustainable finance to a broader audience, helping align everyday banking with environmental goals. The rapid growth of FinTech, driven by e-commerce, mobile device usage, and demand for faster financial services, is disrupting conventional banking. While FinTech expands access to sustainable finance by aligning banking with environmental goals, it raises concerns about the ability of traditional banks to adapt to these technological and sustainability shifts.

Matvos et al. (2018) note that banks face rising competition from shadow banks, fintech firms, neobanks, and startups across sectors like lending, payments, and digital banking. Navaretti et al. (2018) argue that fintech firms should work with banks rather than replace them, as they lack access to central bank funding and liquidity services.

Fintech's ability to provide quicker, digital financial services is having an effect on banks' profits, according to Abu Karsh and Sharif (2020). Fintech adoption increased the competitiveness and performance of UAE banks, according to Dwivedi (2021). According to Goswami (2022), by eliminating financial and physical barriers, fintech tools like mobile wallets aid in closing the gap between banked and unbanked populations.

Fintech is revolutionising banking by providing faster, digital, and more sustainable financial services, but little scientific research has been done to fully understand its effects. This highlights the need to comprehend how fintech affects traditional banks' performance and sustainability as well as the tactics that banks need to use to stay competitive in this changing financial environment.

Objectives of the study

1. To investigate consumers' perceptions of Fintech and sustainable finance services' quality, usability, and satisfaction.
2. To examine how traditional banking operations are affected by Fintech and sustainable finance, taking into account partnership tactics, service adaptation, and competitive reactions.

Scope of the study

The goal of this research is to comprehend how fintech affects conventional banking and how it contributes to a more sustainable and environmentally friendly future. It looks at how fintech services impact banking operations, specifically with regard to digital efficiency, eco-friendly solutions, and less paper use. The quality of fintech service delivery is also examined in the study, along with factors like speed, ease of use, and environmental sustainability. Only consumer opinions and experiences with fintech and sustainable finance products as represented by the sample responses are included in the scope.

Study Limitations

The analysis of fintech and sustainable finance services is the exclusive focus of this study; other general banking services are not included. A small sample of fifty respondents was taken into consideration due to time constraints, and this sample may not be representative of all fintech users. Instead of using in-depth longitudinal analysis, the study relied on exploratory inquiry. Furthermore, some respondents did not give thorough or pertinent responses, which made it difficult to compile and analyse the data. Because of this, results should be interpreted cautiously and may need to be further validated through larger or more focused studies.

Analysis & Results

Demographic Profile

Among the respondents, 50.7% were female, and 39.3% were aged between 31 and 40 years. Additionally, 46.7% were married, and 31.3% held a diploma qualification. In terms of occupation, 36.7% were self-employed, while 56% reported an annual income between ₹21,000 and ₹50,000. Overall, 37% of participants had a positive impression of Fintech and sustainable finance services.

Quality of Fintech and Sustainable Finance Services

Approximately 33% strongly agreed with the integration of cards, while 30% agreed with mobile payments. 47.3% were satisfied with transaction costs, and 46.7% strongly supported smart card technology. Similarly, 30% strongly agreed with blockchain technology, while 35.3% expressed mixed feelings about chatbots. 52% agreed with omni-channel services, and 42.7% strongly agreed with AI-powered systems. Lastly, 33% agreed with the use of e-wallets.

Convenience, Speed, and Ease of Use of Fintech Services

About 38.7% were satisfied with the efficiency of technology use, and 56% found reports to be clear and useful. 30% were very satisfied with frequent transactional communication, and 46.7% were satisfied with online customer support. Moreover, 52% were very happy with the transparency of services, while 46% found transactions easy to conduct. The app was rated highly user-friendly by 52.7% of respondents, though 36% were extremely dissatisfied with its data storage capacity. 44.7% rated the app's network speed as satisfactory.

Attractive Fintech and Sustainable Finance Products

Regarding product attractiveness, 36% strongly supported card integration, and 30% agreed with mobile payments. 47.3% were satisfied with transaction costs, and 46.7% strongly supported smart card technology. 30% strongly agreed with blockchain adoption, while 35.3% had mixed opinions about chatbots. 52% agreed with omni-channel offerings, 42.7% strongly agreed with AI-powered systems, and 34% supported e-wallets.

Key Advantages Of Fintech And Sustainable Finance Companies:

Digital Access and Convenience: FinTech platforms allow people to open accounts, pay bills, and transfer money on smartphones or computers, broadening access for remote communities. Digital banking has raised inclusion: nearly 75% of adults in developing countries now have bank accounts (up from 42% in 2011. FinTechs have “shaken up the banking industry” by democratizing service.

Lower Costs and Efficiency: FinTech companies operate mainly online (no branches) and use automation/AI to cut operational costs. These savings allow lower fees or better interest rates for customers. Profitable fintechs manage costs tightly and often pass savings to users.

Innovation and Personalization: FinTech firms rapidly adopt new technologies (AI, machine learning, blockchain) to create novel services. They use advanced analytics to tailor products to individual needs. For

example, apps can analyze spending to give personalized budgeting tips or investment advice.

Financial Inclusion: FinTech extends finance to underserved people. Mobile money services (e.g. M-Pesa in Kenya) have given millions access to banking via phones. Peer-to-peer lending and crowdfunding platforms let small businesses and individuals get loans or investments more easily than traditional banks.

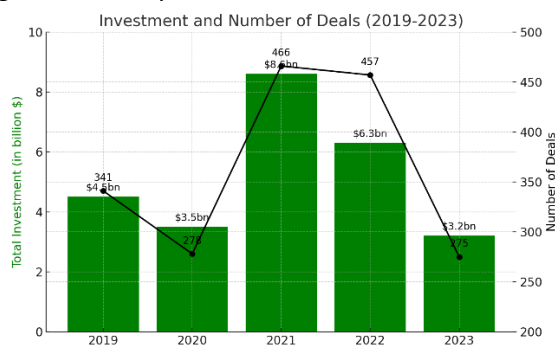
Sustainability and ESG Focus: Many sustainable finance companies integrate environmental and social goals. Green fintech platforms let users support eco-projects (e.g. the Aspiration app rounds up purchases to plant trees). Additionally, FinTech tools use blockchain and artificial intelligence to process massive ESG data sets, increasing transparency in sustainable investing.

Fintech And Sustainable Finance's Effect On Traditional Banking

The emergence of fintech and sustainable finance has significantly altered the traditional banking environment in India. The dominance of banks has been challenged by fintech companies like Paytm, PhonePe, Razorpay, and BharatPe that offer quick, user-friendly digital payment and lending solutions. Their services are often less complicated and require less paperwork, and they help individuals and small businesses that are still neglected by traditional banks. Indian banks have had to drastically digitise their products as a result of the fintech industry's explosive growth. Most public and private banks now offer online banking, Unified Payments Interface (UPI) interfaces, and robust mobile banking apps in order to remain competitive. For example, SBI YONO and ICICI iMobile provide seamless online banking, investing, and shopping services on a single platform. Additionally, banks are investing more in artificial intelligence, data analytics, and machine learning to enhance fraud detection, automate processes, and customise customer experiences. For instance, HDFC Bank uses AI-based chatbots like "Eva" to promptly respond to customer enquiries, while ICICI Bank's iPal enhances digital interactions. Another shift in approach has been the collaboration between banks and fintech firms. Traditional banks and fintech companies are working together to integrate cutting-edge concepts without developing them internally. For example, Yes Bank and Axis Bank have expanded their service offerings and technological capabilities by partnering with fintech companies to provide advanced digital lending and payment solutions. All things considered, fintech and sustainable finance have forced India's traditional banks to adapt swiftly, adopt cutting-edge technology, and offer digital services that are customer-focused. This shift is making banking more inclusive and efficient, reducing gaps for underbanked and unbanked people across the country.

Challenges For Fintech And Sustainable Finance Companies

Fintech and sustainable finance businesses are upending traditional banking, but they also have to overcome a number of obstacles. The primary obstacle is regulation. Because fintech businesses are frequently less regulated than traditional banks, customers may become wary of them. The security and dependability of Fintech services are questioned in light of this regulatory discrepancy. Fintech and sustainable finance businesses may find it difficult to expand internationally due to the intricacies of varying regulatory frameworks in different locations. Moreover, it is harder to stay on top of regulatory developments as Fintech technologies develop quickly. The development of customer trust and maintaining adherence to changing legislation are essential to Fintech firms' long-term viability.



Source: Adapted from KPMG Pulse of Fintech Report, 2023 and CB Insights Global Fintech Report, 2023.

The total investment and number of deals in the sector from 2019 to 2023. Investments peaked in 2021 at \$8.6 billion with 466 deals, driven by fintech expansion and rapid digital adoption. However, there has been a steady decline since then, with 2023 recording the lowest investment at \$3.2 billion and 275 deals. This downward trend reflects market corrections, cautious investor sentiment, and stricter funding criteria. Despite this slowdown, the industry continues to show resilience by focusing on sustainability, technological innovation, and strengthening profitability for long-term growth.

Funding is another major issue that fintech startups must deal with. Fintech investment is growing, although it is still mostly concentrated in a small number of very large enterprises. Because of this concentration, smaller Fintech sustainable finance businesses sometimes find it difficult to raise the money they need to expand and develop. Their capacity to expand operations, create new goods, and effectively compete in the market may be hampered by limited finance sources. Further compounding their fundraising issues, smaller Fintech companies can find it difficult to satisfy the strict standards of conventional investors. Therefore, resolving these financial discrepancies is crucial to developing a more vibrant and inclusive Fintech sustainable finance industry.

Conclusion

A new era of digital financial services that prioritise speed, convenience, personalisation, and environmental sustainability has been brought about by fintech and sustainable finance. Traditional banking has been upended by their expansion, which has forced banks to embrace digital technology, improve client experiences, and work with FinTech companies to stay competitive. These developments have increased financial access to marginalised groups in India, fostering economic inclusion and bolstering the country's goal of a digital economy. FinTech and sustainable finance firms do, however, face significant obstacles in spite of their many benefits. While different frameworks across jurisdictions impede international expansion, regulatory disparities raise questions about security and dependability. Furthermore, funding is still concentrated in big businesses, which restricts the ability of smaller startups to grow and innovate.

FinTech and sustainable finance firms need to improve customer trust, investigate a variety of funding options, and fortify compliance systems in order to maintain their expansion and influence. To stay relevant in this quickly changing financial ecosystem, traditional banks should continue to invest in innovation and take advantage of technological partnerships. All things considered, the combination of FinTech and sustainable finance has enormous potential to build a more equitable, effective, and environmentally friendly banking and financial services industry in the future.

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